# Transportation Provisions of 10 CFR 830 Subpart B: Onsite Working Group Report

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# Topics

- Working Group Charter, Status & Current Focus
- 830 Subpart B Background and Issues
- Nuclear Facility Safety
- Radioactive Material Transportation Safety
- Cost and Safety Considerations
- Summary

# Working Group Charter

Chartered by National Transportation Program, Packaging Management Council in 09/99, Ashok Kapoor, NTP

Objective "Develop recommendations to bring uniformity to onsite packaging programs performed to DOE O460.1A. Central to this understanding is the "methodology" used to demonstrate equivalence to DOT." Uniformity in equivalence methodology should result in package sharing between Sites, reduced documentation costs, and improved onsite-packaging safety.

# Working Group Members

- Dennis Barrett, LLNL
- Paul Homan, SNL
- Gene Kanemoto, INEEL
- Kenneth Lenarcic, RFETS
- Dennis McCall, Hanford
- Dave McCollum, LANL
- Erich Opperman, SRS (chair)
- Jeff Shelton, ORNL
- Bob Stephenson, PANTEX
- Kyle Webster, PNNL

# Past Work - Status

Data was collected on 460.1A based onsite programs and the following general trends were identified:

- All Sites working to DOT equivalence - Methods Vary
- Approaches to Equivalence:
  - Transportation Safety Documents
  - Package specific safety documentation
  - Containment, controls, communications - 3-Cs
  - Graded approach: Packaging, hazards, isotopes, location, route, frequency, weather, time
  - Transportation evaluations: deterministic and risk assessment
- Work is consistent with DOE G460.1-1

# Current Working Group Focus & Summary:
## Implementation of 10 CFR 830 Subpart B

Objective: develop guidance to assist transportation community in cost effective implementation of 830 Subpart B transportation requirements.

Process: cross-walk 830 requirements with current transportation requirements and guidance (O460.1A & G460.1-1).

Findings: current O460.1A process is well established, safe, and meets the intent of 830 Subpart B transportation requirements.

Path-forward: NTP Issue Paper documents findings and will request formal interpretation from Office of Nuclear Facility Safety (EH-53) affirming that compliance with DOE O460.1A programs meets full intent of 10 CFR 830 Subpart B transportation requirements.

# Rule Background: 830 Subpart B Transportation Requirements

- Final rule for 10 CFR 830 Subpart B published 01/10/01
- Includes onsite packaging and transportation of RAM
  - could be interpreted to apply nuclear facility requirements (SARs, TSRs, etc.) to transportation
- During comment period inherent differences between transportation activities and facilities became clear and widely varying interpretations resulted.
- In response - final rule provides a “safe-harbor” through DOE O460.1A and O461.1.
- Now there is considerable discussion on what the safe-harbor actually means.

# "Safe-Harbor" - How Robust?

- Table 2 of Final Rule lists "safe-harbors" for providing the necessary documented safety analyses.
- Item D (P. 1812) of Federal Register Supplementary Information cites the Orders: "…as acceptable ways to satisfy the rule requirements for transportation activities covered by the provision of this rule."
- Robust Safe-Harbor Interpretation: Compliance with all Subpart B requirements for transportation may be achieved by full compliance with DOE Orders 460.1A and 461.1 without applying other requirements traditionally applied to fixed nuclear facilities.

# "Safe-Harbor" Could be Clarified by:

- A formal interpretation from EH-53 affirming the National Transportation Program Issue Paper position that compliance with DOE O460.1A programs meet the full intent of the transportation provisions of 10 CFR 830 Subpart B.
- Modifying Table 2 to include the Federal Register Item D page 1812 wording (Robust Safe-Harbor)
- Modifying 10 CFR Subpart B to remove transportation activities from its scope

Working Group Observation: Significant confusion exists over implementation of transportation requirements of the rule. Communication is difficult due to terminology barriers.

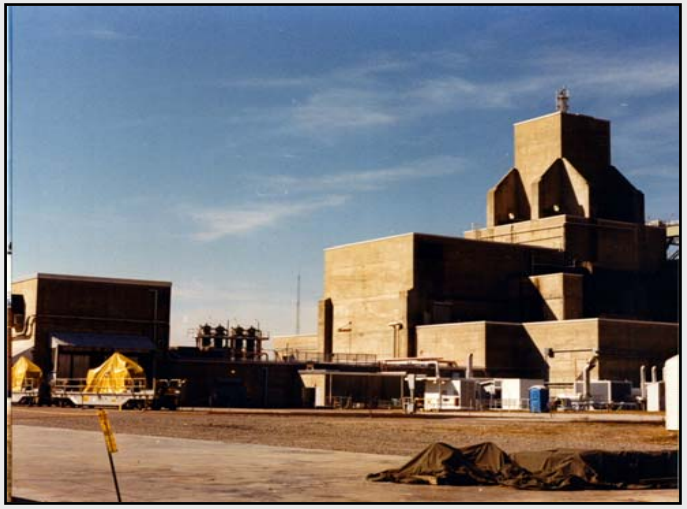
# Possible Root Cause - Apples and Oranges

- Nuclear Facility and RAM Transportation have different origins, terms, methods, approaches, and infrastructures.

- Both protect health and safety of the workers, public, and environment.

# Nuclear Facility Safety

- Part 830 - Nuclear Safety Management. Governs the conduct of DOE contractors, DOE personnel, and other persons conducting activities that affect, or may affect, the safety of DOE nuclear facilities.



Exclusion - transportation activities regulated by DOT

Graded approach - contractor must document basis of graded approach for implementing requirement and submit to DOE

- Subpart A - Quality Assurance Requirements
- Subpart B - Safety Basis Requirements

# Subpart B - Safety Basis Requirements

- Safety Basis - documented safety analysis (DSA) and hazard controls based on facility categorize per DOE-STD-1027-92 Curie thresholds
- Documented Safety Assessment (DSA) - defines real and postulated hazards associated with a particular facility (DOE G421.1-2)
- Technical Safety Requirements (TSR) - define hazard controls including safety & operating limits, surveillance requirements, administrative and management controls derived from DSA (DOE G423.1-1)
- Unreviewed Safety Question (USQ) process - means of evaluating changes/discoveries to ensure safety basis remains intact (DOE G424.1-1)
- DOE approval of Safety Basis - by April 10, 2003, a contractor responsible for a nuclear facility must submit for DOE approval a Safety Basis meeting the requirements of this Subpart (B).

# Radioactive Material Transportation Safety

- DOE O460.1A, Packaging and Transportation Safety.

Onsite Safety Requirements. "Onsite hazardous material transfers shall comply with the Hazardous Materials Regulations (HMR), or the site- or facility-specific cognizant Operations or Field Office approved Transportation Safety Document (TSD) that describes the methodology and compliance process to meet equivalent safety for any deviation from the HMRs (DOT)…Approved TSDs shall be in effect no later than 1 year from incorporation of this Order into the Contractor's contract."

- DOE G460.1-1, Implementation Guide for Use with DOE O460.1A.

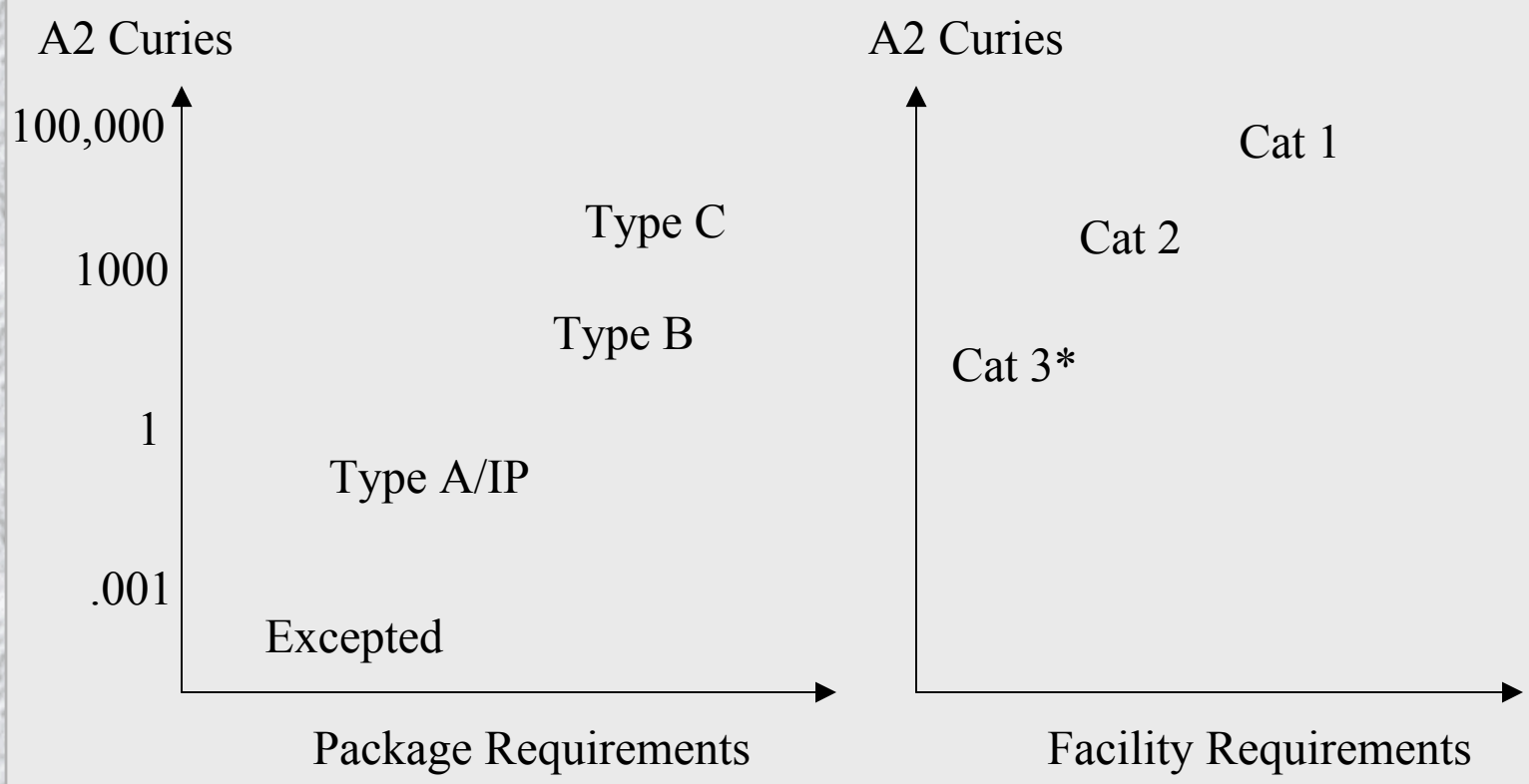
# Implementation Guide for use with O460.1A

- Transportation Safety Document - methodology and compliance process to meet DOT equivalent safety . Submit to DOE for approval.
- Safety Assessment Methodology - integrated approach, define packaging category, specify site controls and communications.
- Graded approach - low hazards: containment during normal transport, higher hazards: containment under more severe handling, high hazard (Type B): containment under normal and credible events
- Packaging categorization - *DOT* - as is, *DOT equivalent* - slight mod, *Non-Equivalent* packaging - packaging alone can not meet DOT
- Specify Site controls and communications - *DOT* & *Equivalent packaging* - same/equivalent to DOT, *Non-equivalent* packaging - establish performance envelope, evaluate transport system (packaging, controls, communication), document in safety assessment.

# Cross-Walk: Both Approaches Have Similar Elements

- Categorization based on Curies - 1027-92 vs. DOT A1/A2
- Graded approach - Cat 3/2/1 vs. Excepted/IP/Type A-B-C
- Technical Safety Requirements - from DSA vs. from DOT
- Documentation - SAR/TSR/USQ vs. TSD/PSSD
- Change control - USQ process vs. Safety Assessment update)

# Categorization: Transportation & Facilities



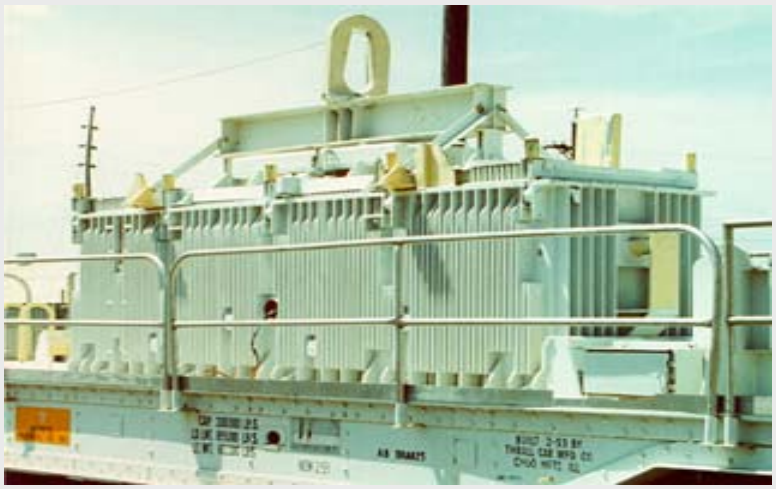

* Average Cat 3 threshold is ~50 Curies

# DOE G460.1-1 Equivalence Process

1. Categorize Contents per DOT A2 values
2. Select Packaging
   - DOT packaging (preferred)
   - DOT equivalent
   - Non-Equivalent
3. Document/Approval - For Non-Equivalent Packaging
   - Establish performance envelope of packaging
   - Evaluate transport system (packaging/controls/communications)
   - Demonstrate system operates within performance envelope
   - Package Specific Safety Assessments/Contractor or DOE Approval
4. Package Closure/Transportation Procedures
   - Closure: content limits and packaging closing instructions
   - Transportation: controls and emergency response

# Onsite Documentation: SRS Example

70 Ton Rail Cask for onsite transfer of Irradiated Fuel.



1. Contents are > A2.
2. Non-Equivalent Type B packaging
3. OSA - Onsite Safety Assessment documents transfer system safety.
4. SER - Safety Evaluation Report (by WSRC) - documents OSA review and identifies content limits, conditions of approval, and transportation controls.
6. OPAF - Onsite Package Authorization Form - Approves package system and summarizes configuration, content limits, conditions of approval, and transportation controls (WSRC Management Approved)

# Onsite Safety - Transportation & Packaging

DOE Occurrence Reporting and Processing System (ORPS) has monitored occurrences since 1993:

- 36,180 total occurrences
- 1,300 involved transportation & packaging
- 9 involved slight leaks from Excepted or lesser packages
- 2 involved Type A packages (trace & teaspoon)
- No leaks were recorded from Type B packages

This record points to the effectiveness of the current DOE requirements and guidance governing onsite packaging and transportation.

# Cost/Benefit of Implementing 830 Subpart B Requirements

Implementation of 830 is being considered at all of the DOE Sites. Since aspects of Rule implementation are under development at Sites, cost considerations and associated benefits are preliminary.

Working Group Survey of 8 Sites indicates implementation will be costly, and some value will be added.

- One time cost - $1.7 - $2.3M (6 Sites provided numbers, 2 TBD)
- Ongoing costs - $1.4 - $2.9M/year (5 Sites, 3 TBD)
- Value added - 1 Site - USQ process to add value/reduce DOE review time/help audits, 1 Site - improve PSSD clarity and approval, 6 Sites - no identified value added.

# Summary

- RAM Transportation and Nuclear Facilities each have well developed safety programs with different origins and infrastructures.
- Implementation of the Rule is expected to be costly and not necessary if DOE Orders 460.1A and 461.1 are complied with.
  - Order compliance provides the same safeguards as the Rule but with an appropriateness defined by the simplicity of Transportation issues
  - Order compliance has a documented history of safe operations
- NTP plans to request a formal interpretation from Office of Nuclear Facility Safety (EH-53) affirming that compliance with DOE O460.1A programs meets full intent of 10 CFR 830 Subpart B transportation requirements. (A Robust “Safe-Harbor” Interpretation)